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ABSTRACT

Recent studies suggest that less than half of the nation's teacher preparation institutions require students to design and deliver instruction using technology, and even fewer require technology use during student teaching. The School Technology and Readiness (STaR) Chart for schools, colleges, and departments of education (SCDEs) was designed to address the lack of technology preparedness in today's teacher education programs. The Teacher Preparation STaR Chart was developed with the assistance of a wide group of stakeholders, including deans, faculty members, students, superintendents, educators, and business community members. It offers individual SCDEs an explicit tool for determining their current standing and future directions. It provides a visual display of key factors for the integration of technology in all aspects of teacher preparation. Section 1 of this document sets the context for using the Teacher Preparation STaR Chart. Section 2 explains how to use this self-assessment tool, presenting a call for action. Section 3 emphasizes how to understand the STaR Chart, focusing on roles for the college or university as a whole; roles for the SCDE deans and directors of teacher education; and roles for faculty, students, and alumni. (SM)

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The CEO Forum
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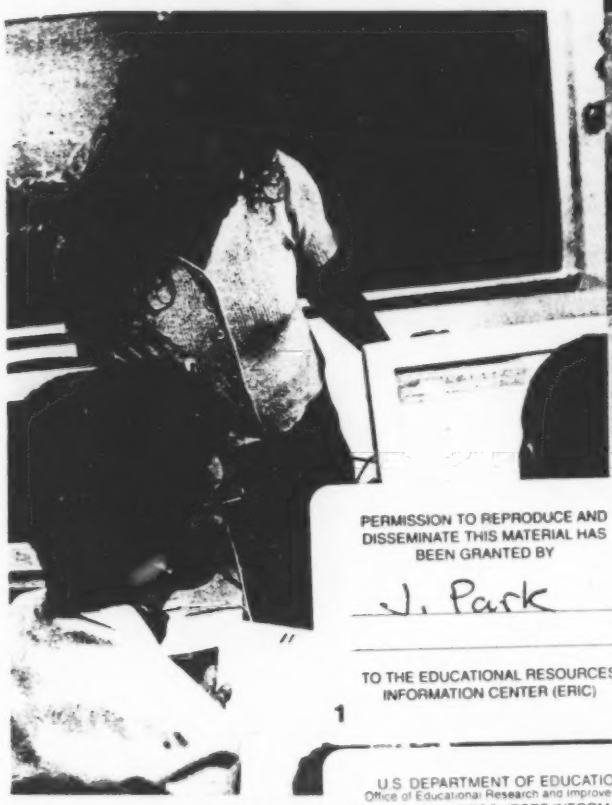
Teacher Preparation STaR Chart:

A Self-Assessment Tool for Colleges of Education



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Preparing a New Generation of Teachers

January 2000

SP038970

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The CEO Forum on Education & Technology

Teacher Preparation STaR Chart: A Self-Assessment Tool for Colleges of Education

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Part 1: Setting the Context

In the next decade, the United States will need over 2.2 million new teachers to fill the nation's classrooms—a rate of approximately 200,000 per year. Teachers of the new millennium will need a deep knowledge of their field, a thorough understanding of the learning process, a sincere commitment to nurturing a child's potential, and a love of learning that is shared with their students.

These attributes alone aren't enough for teachers to prepare their students to succeed in the Digital Age. Teachers must be comfortable with technology as a tool to engage students and enhance their learning. If new teachers are ill-equipped to use the instructional tools technology has made available, their professional education will be incomplete.

Preparing a New Generation of Teachers: A National Crisis

In the last decade, reports have sounded the alarm: new teachers are not entering the classroom well prepared to use technology. In a definitive report to Congress in 1995, *Teachers and Technology: Making the Connection*, the Office of Technology Assessment (OTA) stated:

> Despite the importance of technology in teacher education, it is not central to the teacher preparation experience in most colleges of education in the United States today. Most new teachers graduate from teacher preparation institutions with limited knowledge of the ways technology can be used in their professional practice. (OTA, 1995, p. 2)

Recent studies suggest that little progress has been made since OTA's clarion call. Today, less than half of the nation's teacher preparation institutions require students to design and deliver instruction using technology. Even fewer require technology use in the student teaching experience. Since less than half of the faculty in teacher preparation programs incorporate effective use of technology in their courses, perhaps this is not surprising.

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In our technology-oriented society, new teachers are being placed in classrooms without an understanding of how technology can support their teaching—or their students' learning. As a result, school systems are forced to provide remedial instruction for what should be the most technologically-ready generation of teachers.

State and federal agencies, university governing boards, and the private sector have at last begun to take notice. The American Council on Education (www.acenet.edu) has called on college and university presidents to "move the education of teachers to the center of their professional and institutional agendas." In addition, the U.S. Department of Education recently announced its first technology grant program aimed at preservice teacher education ("Preparing Tomorrow's Teachers to Use Technology"). Finally, businesses and foundations have also begun to respond to this challenge with their own special grant programs and initiatives.

States are beginning to add technology-related requirements for program approval or licensure, but only three states (North Carolina, Idaho, and Virginia) require programs to assess technology–related knowledge and skills of teacher candidates. Clearly, the United States has a long way to go. The children of the Digital Age are too often taught by teachers prepared with techniques more appropriate for the Industrial Age.

Current Use of Technology in Teacher Preparation

The growth of technology infrastructure in the K-12 sector has been documented in regular data collection (e.g., NCES, Quality Education Data, and Market Data Retrieval), but the data regarding technology expenditures and deployment in the 1,300 institutions that prepare teachers is more limited. Two recent studies, one in 1996 by the the American Association of Colleges of Teacher Education (AACTE) (www.aacte.org), and the other in 1998 by the International Society for Technology in Education (ISTE)(www.iste.org) for the Milken Exchange on Education Technology (www.milkenexchange.org), offer a window into the status of technology in teacher preparation institutions nationwide. Though limited (only about 1/3 of institutions responded to either study), the findings indicate that the biggest challenge facing institutions today is preparing faculty to model the effective use of technology as a teaching and learning tool.

In 1998, the Campus Computing Project (www.campuscomputing.net) conducted the "National Survey of Information Technology in Higher Education" which targeted chief technology officers (CTOs) at two- and four-year colleges and universities across the country. These results provide another assessment of technology in teacher preparation programs. When asked to compare their information technology components in programs across their campuses, CTOs ranked their education programs high in some areas, but near the bottom in others:

- Use of technology for scholarship and research: 2nd out of 10;
- Use of Internet and Web resources: 6th out of 10;
- Use of technology for instruction: 7th out of 10; and
- Preparing their students with the technology skills needed over the next decade: 7th out of 10.

Why a Teacher Preparation STaR Chart?

Concerned by the lack of technology preparedness in today's teacher education programs, the CEO Forum developed an assessment tool that would help teacher preparation programs chart a new course. Encouraged by members of Congress, the U.S. Secretary of Education, and experts in the teacher education community, the CEO Forum developed a School Technology and Readiness (STaR) Chart for

schools, colleges, and departments of education (SCDEs). Building on the success of the STaR Charts developed in 1998 and 1999 for the K-12 community (see page 4), the Teacher Preparation STaR Chart:

- Provides teacher preparation programs with a set of benchmarks they can use to measure their progress in integrating technology into their programs;
- Offers explicit goals that SCDEs are encouraged to strive towards as they move from "Early Tech" to "Advanced Tech;" and
- Draws national attention to the need for programs, policies, and funding to ensure that all teachers entering the classroom are competent and confident in their ability to use technology effectively to support student learning.

The Teacher Preparation STaR Chart was developed with the assistance of a wide group of stakeholders, including education deans, faculty members, students, superintendents, educators, and members of the business community. Their input and guidance provided perspective and a sense of urgency for this project.

Key Considerations in Creating the Teacher Preparation STaR Chart

The ISTE, AACTE, and Campus Computing Project studies highlight the dilemma of teacher education institutions: they benefit from being part of the higher education community, but have their own special challenges. For example, many teacher education programs:

- Receive less attention than the higher status professional programs in the university such as law, engineering, business, and medicine;
- Have a less affluent alumni base, meaning that large gifts from donors (as well as industry) are harder to obtain; and
- Are not accredited (only 38 percent of the nation's 1,300 teacher preparation programs are accredited by the National Council for Accreditation of Teacher Education (NCATE), the voluntary accrediting association for schools, colleges, and departments of education).

Given these challenges, leadership is particularly critical to providing vision and support for change. Large and continuing expenditures in technology are needed for providing and maintaining up-to-date hardware, software, and connections. Training and technical support for faculty are also needed.

The Good News: Investing in Technology Provides the Opportunity to Jumpstart Teacher Preparation Reform

Technology holds the potential for new and better ways of educating tomorrow's teachers. It has already facilitated the following innovations:

- Learning tools, built on research of the learning process, that can help build greater understanding;
- Richer models of effective teaching;
- Alternative opportunities for teaching observations;
- New means of reaching potential teacher candidates located at a distance from campus;

- Better ways of supporting candidates in student teaching and the first years of teaching; and
- New models of working with alumni.

To facilitate teacher education enhancements such as these, schools, colleges, and departments of education must be equipped with the infrastructure, both technical and human, that will support these improvements. How well are they meeting this challenge? The Teacher Preparation STaR Chart was developed to help answer this question.

The CEO Forum on Education & Technology: Leadership for Change

Over the past two years, the CEO Forum on Education & Technology has made significant contributions in helping K-12 educators understand, plan for, and assess their progress in integrating technology into their schools. The 1999 Year 2 report, *Professional Development: A Link to Better Learning*, included a series of recommendations to help ensure that teachers are well prepared to guide today's students to future success. While several recommendations focused on continuing professional development of teachers, the very first recommendation highlighted the importance of building a strong foundation of technology expertise in the initial preparation of all new teachers:

> "Schools of education must prepare new teachers to integrate technology effectively into the curriculum."

This recommendation included the following target goals:

- National accreditation standards for schools of education should require that schools of education prepare new teachers and administrators to integrate technology into the classroom by 2000;
- Schools of education should provide faculty with the tools, incentives, and on-going professional development they need to integrate technology into the teacher training curriculum by 2001;
- New teacher and administrator licensure and certification programs should require proficiency integrating technology into the curriculum by 2003; and
- Technology funding for schools of education should be increased.

The Teacher Preparation STaR Chart is an outgrowth of the 1998 report's recommendation.

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How to Use this Self-Assessment Tool

The Teacher Preparation STaR Chart offers individual schools, colleges, and departments of education (SCDEs) an explicit tool to determine their current standing and future direction. It provides a visual display of key factors for the integration of technology in all aspects of preparing teacher candidates. Like the K-12 STaR Chart, its uses include:

Setting benchmarks and goals:

- SCDEs can use this tool to identify their current technology profile and set goals for the future;
- SCDEs can use it to determine funding priorities; and
- University, college, and department leaders can use the STaR Chart to help determine where funds are needed to fill gaps.

Applying for grants:

- SCDEs can identify their educational technology profiles and objectives when applying for technology-related grants.

Creating assessment tools:

- SCDE leaders can use the STaR Chart as a basis for constructing their own institutional technology assessments.

The Teacher Preparation STaR Chart has three levels: Early, Developing, and Advanced Tech. Each category also has a Target Tech indicator which sets a goal for the overall implementation. It is assumed that institutions will fall within various levels across the matrix. Typically, an institution will be further along in some areas than others.

We encourage all those who care about the renewal of teacher preparation programs on campus—university leaders, teacher education deans, faculty, and students—to study the STaR Chart and make it a starting point for discussions within the institution. While this document presents a graphical layout of the STaR indicators and levels, the CEO Forum website (www.ceoforum.org) contains an online version of this tool that can be used for conducting an institutional assessment. The categories and indicators of the chart are described more fully in Part II of this document.

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A Call for Action

While change comes slowly in higher education, America's children cannot wait. Technology is an integral part of their reality today and the future they will create. Technology offers great potential for new and more powerful learning, but only if teachers are prepared to guide, shape, and

Action

1 States should require each teacher preparation institution to conduct a STaR or other technology self-assessment as a criterion for funding;

2 States should include demonstrated proficiency in using technology appropriately for supporting learning as a key requirement for teacher certification;

States
- Provide resources to SCDEs to meet human and technical infrastructure needs;
- Require demonstration of technology proficiency for certification; and
- Create means of sharing expertise across the K-16 spectrum.

Federal Government
- Recognize, reward, and disseminate effective models of preparing teachers for the Digital Age;
- Support development of tools and materials to enhance teacher preparation for the Digital Age; and
- Support and disseminate research on the impact of technology on learning.

Private Sector
- Support SCDEs on a comparable scale with business, engineering, medicine, and other professional schools; and
- Provide sabbaticals in technology-rich environments for teacher educators and researchers.

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CEO Forum School Technology and Readiness

Teacher Prepa

University

University Chancellors, College Presidents, Provosts and

Campus Leadership

	1 Strategic planning incorporating technology	2 Funding for technology in SCDE	3 Technology appropriately integrated in courses in all departments	4 Access to advanced technologies in campus-wide facilities
EARLY Tech	Minimal; limited goals	Below most other campus programs	25% of courses	25% of facilities
DEVELOPING Tech	Some; clear goals	Equals most campus programs	50% of courses	50% of facilities
ADVANCED Tech	Continuous improvement	Equals top 2-3 campus programs	75% of courses	75% of facilities
TARGET Tech	Strategic planning around technology for dynamic growth of the institution	SCDE technology funding ranks within the top programs on campus and is given a priority in fundraising efforts	Wherever appropriate, all courses throughout campus integrate technology to support learning	Advanced technology access provided for all faculty and students

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aration **STaR Chart:** A Self-Ass

All Deans					Ed
	Campus Infrastructure		**SCDE Leadership**		
	Strategic planning incorporating technology	Funding for technology internally and via fundraising	Rating, tenure and promotion of faculty with technology, research and teaching expertise	Program guided by NCATE or equivalent technology integration standards	Partners schools
Limited	**Minimal; limited goals**	**No budget line item** **Limited investments** Limited grants and fundraising	**Not a factor**	**Standards not met**	Limite Few c progr
Some	Some; clear goals	Modest budget line item Growing investments Targeted fundraising	Rewarded	Meets standards	Som Gro inse
Plentiful and accessible	Continuous improvement	Substantial budget line item **Continuous reinvestments** Aggressive fundraising	Priority	Exceeds standards	Two exp Exte inse
Just-in-time, just-what's needed training and support for all programs and departments	**Vision for meeting expanding goals is built around technology as a catalyst for reform**	Adequate funding to support all target tech goals	Multiple faculty incentives support technology integration and research	Program is a model for other SCDEs in alignment with and going beyond professional standards for technology integration	Partne comm techno

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How to Determine Your Institution's Technology Readiness

The CEO Forum's STaR Chart is a guide, not a definitive measure, of a college or university's effectiveness in integrating technology and planning for technology resources. Depending on the category, your institution may fall within a wide range of technological readiness. Since this is intended to be a guide, such mixed results should be expected. The chart is intended to help institution's evaluate their technological readiness and help them plan for meeting technology goals. This evaluation is also available online at www.ceoforum.org.

ssment Tool for Colleges of Education

Schools/Colleges/Departments of Education (SCDEs)

:ation Deans and Directors of Teacher Education

	SCDE Infrastructure			
:ach or inservice	Less than 25% of facilities Equipment 5+ years old	Few workshops Limited content integration No training incentives	Takes several days	Basic skills course 25% of methods and content courses
: outreach and : program	50% of facilities Equipment is 3-5 years old	Many workshops Content focused Training incentives	Takes place next day	Intermediate skills courses 50% of methods and content courses
flow of : outreach and program	100% of facilities Continuous upgrades	Multiple forms Mentoring, peer or student assistance Integrated with goals Generous training incentives	Takes place same day	Advanced integrated skills courses Most methods and content courses
ips built around K-16 vision for gy in education	The right technology is there, when and where it's needed for teaching and research	Formal and informal training and mentoring available to all faculty with incentives for application in teaching and research	Tech support available 24/7	All coursework built on research on optimal uses of technology to enhance teaching and learning

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1. This assessment should be taken by at least two groups: 1) the leadership of the entire institution and, 2) the leadership of the school, college or department of education.
2. Select one of the two categories located across the top: university (refers to the entire institution) or SCDE's (refers to the college of education).
3. For each column in the chart, find the box that most accurately describes your institution.
4. After determining where your institution falls, compare your program components with the ones listed in the Target Tech box, which describes the ideal scenario.
5. Read the corresponding information under "Part II: Understanding the STaR Chart" for an explanation about each of the columns.
6. Use your findings to start discussions with school leadership and faculty, including department heads, teacher educators, technology directors, alumni and associated school districts.

	Faculty	Students	Alumni
SCDE Curriculum	Competence & Use		Connections
Few courses	25% of field experiences Optional for student teaching	100% at entry or adoption level	50% use technology well in lessons and products 50% meet performance-based competencies 50% enter classroom ready to teach with technology	Occasional, unfocused
Many courses	50% of field experiences Expected in student teaching	100% at adoption or adaptation level	75% use technology well in lessons and products 75% meet performance-based competencies 75% enter classroom ready to teach with technology	Regular, focused
Most courses	75% of field experiences Required in student teaching	100% at adaptation or appropriation level	100% use technology well in lessons and products 100% meet performance-based competencies 100% enter classroom ready to teach with technology	Aggressive, targeted
Wherever appropriate, courses integrate online resources and collaborative technologies to enhance learning opportunities	Criteria for field experiences around best practices in teaching with technology; SCDE helps build local capacity to make this possible	All faculty are at the appropriation or invention level in using technology for research, teaching, and meeting professional goals	All graduates meet the highest standard of technology teaching expertise, are sought after for this skill, and become technology leaders in their schools	Targeted program of connections with graduates benefiting SCDE and alumni

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lead this change. Today's teacher preparation programs must equip tomorrow's teachers for this challenge. This will not happen unless all parties work together for a new vision of teacher preparation for the 21st Century. Listed below are suggested policy actions for each partner in this challenge. Working together, these stakeholders can ensure that tomorrow's teachers are equipped to support the learning needs—and the ever-expanding dreams—of America's children.

Items

3 Corporations and state and federal governments should increase their priorities for investments in schools, colleges, and departments of education; and

4 Funders should tie support for schools, colleges, and departments of education to commitments to meeting Target Tech standards.

Universities

- Ensure that teacher prepraration is a priority;
- Provide resources necessary to build faculty expertise and program strength;
- Meet NCATE or comparable accreditation standards; and
- Support collaboration across the university.

Teacher Preparation Institutions

- Support technology planning with resources;
- Send a message that technology is a key to learning and growth:
  - In courses
  - In field experiences
  - For faculty and students
  - With alumni and K-12 partners
- Offer a "technology warranty" for graduates.

K-12 School Districts

- Require technology proficiency in new hires;
- Offer technologically-fluent teachers as supervising teachers and mentors; and
- Share expertise with SCDE faculty.

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Part II: Understanding the STaR Chart

Part II of this document is intended to provide a more in-depth explanation for each column of the Teacher Preparation STaR Chart. This section should be used as a reference in working through the STaR Chart. Each paragraph corresponds to the numbered column on the chart.

Roles for the College or University as a Whole

Schools, colleges and departments of education (SCDEs) do not exist in a vacuum—they are part of the larger university context where institutional support for teacher preparation from the president, the provost, the chief information officer, and other college deans, is critical.

UNIVERSITY CHANCELLORS, COLLEGE PRESIDENTS, PROVOSTS, AND ALL DEANS

Campus-wide Leadership

1 **Strategic planning incorporating technology**

College or university leaders committed to integrating technology in all aspects of teaching and learning on campus will be far better positioned to ensure that technology is a part of the learning environment for their students. But university leadership must go further. As the American Council of Education report said in their 1999 *Action Agenda for College and University Presidents*, the "first and most important action for college and university presidents is to move the education of teachers to the center of their professional and institutional agenda. They must clarify and articulate the strategic connection of teacher education to the mission of the institution."

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2	**Funding for technology in SCDE**	Institutional leadership must translate into financial support for the teacher preparation program. Most SCDEs receive over half (54 percent on average) of their funding from the institution as a whole. Thus, support translates into the dollars needed for building the human and technological infrastructure of the teacher education program. It also means giving the SCDE the green light to seek financial support from those donors (foundations and businesses) whose support has typically been targeted for business, engineering, computer science, and other high visibility colleges and departments on campus.
3	**Technology appropriately integrated in courses in all departments**	Most teacher candidates take many of their courses in other academic departments on campus (up to 75 percent of coursework in some programs). If teacher candidates are to appreciate how technology supports understanding in all academic areas, it is important that faculty across the campus provide role models for the appropriate integration of technology in teaching.

Campus-wide Infrastructure

4	**Access to advanced technologies in campus facilities**	The availability of up-to-date hardware, software, and telecommunications access throughout the campus—in dorms and study areas, in classrooms and faculty offices, in libraries and laboratories—is critical to the education of teacher candidates. This also means that access is available to students both on and off campus.
5	**Campus-wide faculty development and technical support**	Training and support to use campus facilities is often provided by the larger institution. The campus-wide support network should be a system that makes learning about and using technology a seamless process throughout the institution.

Roles for the Schools, Colleges, and Departments of Education (SCDEs)

Just as the principal provides the vision for a K-12 school, the dean sets the tone for what will occur in the SCDE. If technology is to be an integral part of the school's vision for the future, the dean, along with the department chairs and directors of teacher education who lead key units in the program, must be committed to using technology as a catalyst for reform.

EDUCATION DEANS AND DIRECTORS OF TEACHER EDUCATION

SCDE Leadership

6	**Strategic planning incorporating technology**	Technology should be a catalyst that sparks the vision for change within a strategic plan for the SCDE. The plan should take into account how technology can support the overall goals of the teacher preparation program. One of the goals of the strategic plan should be to meet Target Tech goals of the STaR Chart within a reasonably defined time period, with clear indicators for measuring success.
7	**Funding for technology internally and via fundraising**	This plan must be supported by a line item budget for technology, something that is often missing in the budgets of SCDEs. Data suggests that the teacher preparation institution typically provides only $9 out of every $100 spent on technology. The deans and department chairs that make technology a priority commit more of their budgets to technology and are more aggressive in seeking additional funding from private sources and grants.

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8	**Hiring, tenure, and promotion of faculty with technology research and teaching expertise**	SCDE leaders must set policies that provide incentives for faculty to learn about, experiment with, design and deliver technologically supported instruction. These policies must, in turn, be supported by resources that send a message that technology use is valued as a component of professional practice, and provides tools they need to use technology for research and training. Unless hiring, promotion, and tenure decisions recognize innovative teaching and development activities with technology, faculty will find it difficult to take time away from the pressure to "publish or perish" in order to advance their professional careers.
9	**Program guided by NCATE or equivalent technology integration standards**	Many states do not require accreditation of the institutions that prepare educators. Today, approximately 500 of the nation's 1,300 teacher preparation programs are accredited by NCATE, the National Council for the Accreditation of Teacher Education (www.ncate.org). NCATE has taken a lead in adopting requirements that emphasize the importance of technology in content, pedagogical and professional standards. They also set high standards for faculty qualifications and institutional resources for teaching and scholarship with technology.
10	**Partnerships with K-12 schools around technology**	The employers of new teachers have had little to say about teachers' preparation for the classroom. Teacher preparation programs that are moving forward with technology integration find that having partnerships with the K-12 community provides the needed two-way flow of expertise between the faculty in teacher education and K-12 teachers. By working closely with K-12 schools, teacher educators gain a better understanding of the ways that technology impacts student learning and the tools that today's teachers employ as a part of their instructional repertoire. In addition, some schools of education have gone as far as offering a "warranty" on their graduates to certify that they are well-equipped to enter classrooms. Taking this concept one step further, a "technology warranty" could be another way that school systems could focus their hiring on technologically prepared educators.

SCDE Infrastructure

11	**Access to advanced technologies in SCDE facilities**	The SCDE should provide equitable and ubiquitous access for all faculty and students, including those participating from off-campus sites. One or two wired classrooms or labs will not meet the teaching, research, and communication needs of the teacher education community. Innovative solutions should be considered (e.g., mobile computers with wireless telecommunications access available for on-call teaching needs, centralized research facilities for faculty and student use, etc.). The AACTE study found that in most SCDEs, the ratio of students to computers is approximately 10 to 1, higher than the 7 to 1 ratio in higher education overall and the 6 to 1 ratio now found in K-12 schools. Faculty have better access to a computer but still not every full-time faculty member in SCDEs has access. Furthermore, while close to 11 percent of higher education institutions require or strongly recommend microcomputer ownership for students in specific disciplines or programs, less than 2 percent of those SCDEs responding to the AACTE survey require that their teacher education students purchase a computer.

12 **Faculty development**

Educated in an earlier era, most faculty in colleges of education were not trained to teach with technology. SCDEs face a huge challenge in helping teacher education faculty become more familiar with technology. Many have found it necessary to develop a faculty development program that offers multiple professional development opportunities, going beyond formal workshops to include one-on-one coaching, mentoring from peers, informal "show-and-tell" content applications and "hand-holding" support from more accomplished colleagues. Some institutions have recruited students to serve as "technology teaching assistants" to faculty. Furthermore, new incentives (e.g., summer stipends, mini-grants, and sabbaticals in a K-12 environment) may be necessary to encourage faculty to take the time to learn about technology and change their teaching approaches in order to use it most effectively.

13 **Technical support**

Whether support comes from the central administration, a team based in the SCDE, graduate assistants or undergraduates serving as technical mentors to faculty and students, it is critical that, should problems arise, friendly and skillful technical support is available, 24 hours a day, seven days a week.

SCDE Curriculum

14 **Coursework that integrates technology to enhance learning**

Research confirms that stand-alone technology classes may not provide the best way to ensure that basic skills are integrated in one's teaching repertoire. Today, most teacher education institutions have specific information technology course requirements (85 percent in the Milken/ISTE study), but the majority of these are introductory technology classes. They may not be the best vehicle for understanding how technology supports learning in a field. Teacher candidates should be learning to create and apply technology as a means of supporting student learning in all methods and content courses. The AACTE study found that only 40 percent of institutions require their teacher candidates to incorporate technology when they design and deliver instruction on campus.

15 **Use of online resources to support learning opportunities**

Electronic communication tools can extend the research, communication, and reflection components in traditional courses and provide opportunities to reach learners at a distance. By using these resources in teacher preparation programs, teacher candidates are also exposed to innovative teaching approaches and models for communication.

16 **Technology in field experiences and student teaching**

Many new teachers consider classroom observations, student teaching, and field experiences the most important learning experiences in their teacher preparation program. Student classroom observations should provide opportunities to observe the integration of technology in teaching and learning in K-12 classrooms. Some observations can be enhanced by technology, such as video links that bring the K-12 classroom into the SCDE classrooms, a setting in which a wider range of classroom observations can be offered to students. Wherever possible, student teaching and practicum experiences should be chosen for opportunities that will expose teacher candidates to: best practices in technology integration, a range of technology resources, and the design and delivery of instruction that incorporates technology as a learning and problem-solving tool. The AACTE study found that less than one-third (28 percent) of teacher preparation institutions require this during student teaching. Technology links can also help support ongoing supervision and mentoring.

Roles for Faculty, Students, and Alumni

Institutional change comes from the bottom up as well as from the top down, as students, faculty, and alumni take responsibility for using technology to advance the teaching and learning goals of the teacher preparation institution.

Faculty

Competence and Use

17 **Understanding and use of technology to enhance teaching and research**

As faculty increase their confidence and skill in using technology, they move through a series of stages similar to what the Apple Classrooms of Tomorrow (ACoT) identified as levels of teacher expertise in K-12 classrooms. These are defined as:

Entry: Educators struggle to learn the basics of using technology;

Adoption: Educators move from the initial struggles to successful use of technology on a basic level;

Adaptation: Educators move from basic use of technology to discovery of its potential for increased productivity;

Appropriation: Having achieved mastery over the technology, educators use it "effortlessly" as a tool to accomplish a variety of instructional and management goals; and

Invention: Educators are prepared to develop entirely new learning environments that utilize technology as a flexible teaching and learning tool. They begin to "think with technology," designing new ways to solve learning problems that their students may have faced in the past.

Students

Competence and Use

18 **Understanding and use of technology to maximize student learning**

As states are beginning to require that candidates demonstrate technology proficiency that meets content standards, the ultimate measure for the success of a SCDE is the pass rate of their graduates in meeting these standards. In order for students to develop these skills, they should be required to design and deliver instruction incorporating new technologies both on campus and in the student teaching experience. As school districts become increasingly aggressive in competing for candidates with advanced technology expertise, the sucess of SCDEs graduates in the marketplace will be a critical indiccator of the quality of their teacher preparation program.

Alumni

Connections

19 **Connection with the SCDE for continuous growth**

As education and technology practices change and grow, today's SCDEs have the opportunity to create a two-way support structure that provides continuing expertise to their graduates. The SCDE should create a learning community that works with alumni throughout their careers, as alumni can be a powerful voice for change—and a resource base that helps fund new initiatives.

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CEO Forum Members

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Alan G. Spoon, *President*
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The CEO Forum on Education & Technology

Founded in 1996, the CEO Forum on Education & Technology is a unique four-year partnership between business and education leaders who are committed to assessing and monitoring progress toward integrating technology in America's schools. The CEO Forum hopes to ensure that the nation's students will achieve higher academic standards and will be equipped with the skills they need to be contributing citizens and productive workers in the 21st century.

Organizing Principles

- All students must graduate with technology skills needed in today's world and tomorrow's workplace.
- All educators must be equipped to use technology as a tool to achieve high academic standards.
- All parents and community members must stay informed of key education technology decisions confronting policymakers, administrators, and educators.
- All students must have equitable access to education technology.
- The nation must invest in education technology research and development.

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The CEO Forum Four Year Agenda

Year 1: In *The School Technology and Readiness Report: From Pillars to Progress* (October 1997), the CEO Forum issued the STaR Chart, a self-assessment tool individual schools can use to gauge their progress toward integrating technology to improve education. In its first year, the CEO Forum also issued the first STaR Assessment, a benchmark measure of national progress toward integrating technology in education.

Year 2: Focusing on the issue of professional development, the CEO Forum's Year 2 *School Technology and Readiness Report,* called *Professional Development: A Link to Better Learning* (February 1999), included a status report on educator professional development, an update of the STaR Chart including new criteria for assessing individual school progress on professional development, and an update of the STaR Assessment.

Year 3: The CEO Forum will report on the integration and use of digital learning in K-12 schools as well as update the STaR Chart and STaR Assessment. (Spring 2000)

Year 4: In its final year, the CEO Forum will address the important question of how to measure the impact of technology on student achievement and educational outcomes as well as update the STaR Chart and STaR Assessment. (Spring 2001)

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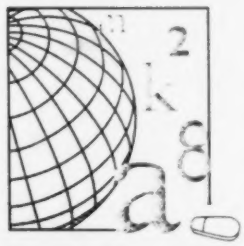

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Additional Resources

American Association of Colleges for Teacher Education (AACTE)
1307 New York Avenue, N.W.
Suite 300
Washington, DC 20005-4701
(202) 293-2450
www.aacte.org

U.S. Department of Education
Office of Educational Technology
400 Maryland Avenue, S.W.
Washington, DC 20202-0498
(800) USA-LEARN
www.ed.gov/technology

American Council on Education (ACE)
1 Dupont Circle, N.W.
Washington, DC 20036
(202) 939-9300
www.acenet.edu

The Milken Exchange on Education Technology
1250 Fourth Street
Santa Monica, CA 90401
(310) 998-2825
www.milkenexchange.org

The Campus Computing Project
P.O. Box 261242
Encino, CA 91426-1242
(818) 990-2212
www.campuscomputing.net

International Society for Technology in Education (ISTE)
480 Charnelton Street
Eugene, OR 97401-2626
(800) 336-5191
www.iste.org

National Council for Accreditation of Teacher Education (NCATE)
2010 Massachusetts Avenue, N.W.
Suite 500
Washington, DC 20036-1023
(202) 466-7496
www.ncate.org

More information from the CEO Forum is available online at:

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